

AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all prior versions of claims in the application.

1. (Currently Amended) A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulation film by oxidizing a surface of a semiconductor substrate using a strongly acidic solution after cleaning the surface of said semiconductor substrate; and

by performing a processing for the formation of a film of the same material as said first insulation film at low-temperature by plasma processing with a radial line slot antenna through microwave excitation, forming a second insulation film of the same material as said first insulation film so that said second insulation film embraces said first insulation film,

wherein a SONOS transistor is constituted by sequentially forming a first oxide film, a nitride film, a second oxide film and a semiconductor film on the semiconductor substrate, and said second insulation film is formed to serve as the first oxide film,

wherein said SONOS transistor is an embedded-bit-line-type transistor.

2. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said second insulation film is formed in an atmosphere containing a radical.

3. (Original) The manufacturing method of the semiconductor device according to claim 1, wherein said second insulation film is formed by plasma oxidation in an atmosphere containing an oxide radical.

4-5. (Canceled)

6. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said strongly acidic solution is a solution containing nitric acid.

7. (Previously Presented) The method of manufacturing the semiconductor device according to claim 6, wherein said solution containing the nitric acid is 70 °C or higher in temperature.

8. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said strongly acidic solution is a solution containing ozone.

9. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said low-temperature processing is conducted at a temperature of 650 °C or lower.

10. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said first insulation film has a film thickness of 1 nm or more.

11. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

12. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said strongly acidic solution is a solution containing nitric acid.

13. (Original) The method of manufacturing the semiconductor device according to claim 3, wherein said strongly acidic solution is a solution containing nitric acid.

14. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said strongly acidic solution is a solution containing ozone.

15. (Original) The method of manufacturing the semiconductor device according to claim 3, wherein said strongly acidic solution is a solution containing ozone.

16. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said low-temperature processing is conducted at a temperature of 650 °C or lower.

17. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

18. (Original) The method of manufacturing the semiconductor device according to claim 3, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

19. (Previously Presented) The method of manufacturing the semiconductor device according to claim 1, further comprising the step of:

after said first isolation is formed, leaving said first isolation film as it is for a fixed time,
wherein said second isolation film is formed after said first isolation film is left as it is for the fixed time.

20. (Canceled)